

A Work Project, presented as part of the requirements for the Award of a Master Degree in
Management from the NOVA – School of Business and Economics.

ASSESSING FRAUD RISK OF “*Seleção, Contratação e Manutenção de Fornecedores*”’s
PROCESS OF SONAE INVESTIMENTOS

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ABSTRACT

The present Work Project (WP) is the result of Sonae's concern with fraud risk, seeking to implement a method that formally describes and evaluates it in its various forms. In a context of limited human, capital, time and tools' resources, the Internal Audit (IA) department of the company developed a framework to raise the awareness of top management and identify which processes of its value chain present a higher level of exposure to fraud, with the purpose of redirecting attention to those and prioritizing the creation of new mechanisms to monitor its KPIs' dynamics.

Keywords: Fraud Risk Assessment; Internal Audit; Fraud Risk; Continuous Audit.

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I. PURPOSE OF THE WORK PROJECT

The current work project (WP) is the result of a directed research internship at Sonae's IA department. The purpose of the internship, as part of the "Call for Solutions" program, was to complete and operationalize a project: developing a fraud assessment (FA) methodology that retrieves the fraud risk of processes, which shall be incorporated in the IA department's analysis of the map of processes. With the methodology finished, an assessment will be conducted in two departments involved in the "*Seleção, Contratação e Manutenção de Fornecedores*" process of the company: "*Direcção Comercial de Casa e Têxtil (DCCT)*" and "*Direcção Comercial de Bazar (DCB)*", from the good's retail division of Sonae (Sonae MC).

Context of the WP

On a recent past, developed economies have been through a period of rapid change. Globalization, financial crisis, increasing complexity of business models and practices (namely, the introduction of complex IT infrastructures), political instability along with other dynamic factors, are issues that companies and employees have had to cope with. The need to deliver results, in this period of great volatility, has consequently led to a higher risk of workers behaving unethically (EY, 2015). In other words, the propensity of employees to act fraudulently has significantly increased (KMPG, 2014; Kroll, 2013) and fraud-related events, like Enron, in 2001, or Volkswagen, in 2015, have become common, thus jeopardizing the integrity of companies' reports (Riley & Rezaee, 2009), the public trust in corporations and, consequently, their market valuation (Vasiu, L., Warren, M. & Mackay, D, 2003).

Even though "fraud does not draw community and political reaction like other crimes" (Chapman & Smith, 2001, pp. 971), the increasing governmental and corporate efforts to create a globally stricter context against fraud (proved by the emergence of more influential laws, articles and books related to the topic than ever before) conveys the topic's relevance (KPMG, 2013; Power, 2013).

Numbers show that fraud is a global issue and it is becoming more dramatic (Farrel & Healy, 2000). In fact, occupational fraud costs, on average, 5% of yearly revenues (ACFE, 2014). Data about losses strictly due to internal frauds in Portugal is unknown. Yet, if losses in retail due to theft totalize 300 million per year in this country (Ferreira, 2015), one can have an idea of the phenomenon's dimension.

Following COSO's Principle 8, "The organization considers the potential for fraud in assessing risks to the achievement of objectives". Gradually, companies' corporate governance evolution determined a shift from the red flag analysis to fraud risk management, which entails prevention, detection and response (Power, 2013), starting with corporate culture enhancements and structured response policies to legitimately deal with present incidents and promote internal resistance to future ones (Iyer & Samociuk, 1992). It was at this point that Sonae decided to develop a method to evaluate fraud risk of its processes to highlight those more prone and help in the IA department deployment of resources.

II. LITERATURE REVIEW

To approach fraud risk, understanding the concepts related to it is imperative. Hence, this section will present the most accepted theories that describe the phenomenon.

Definition of Fraud

Although fraud is a common concept, defining it is not simple, due to the variety of schemes, forms, places and the cultural environment where it can occur (Kirk & Woodcock, 1992). Still, to develop a proper fraud prevention strategy, a company must be able to precisely define and understand the impact of fraud. Otherwise, any plan developed will miss its main objectives (Vasiu, L., Warren, M. & Mackay, D., 2003).

A characteristic of fraud is that it presupposes intent. Also, it can be classified as internal (unethical actions taken within the organization, either by employees or managers) or external (unethical acts carried out by individuals outside the organization). Having these premises in mind, many

definitions have been so far created. For instance, Rossow (2000) clarifies the difference between corruption and fraud, and defines fraud as an “intentional deception by concealing or misrepresenting information that harms the financial interest of another person(s) and benefits the financial interests of the perpetrator” (pp. 887). Wells (2007), has defined fraud as a broad concept that includes any crime which, through deception, has the intention of profiting. According to the Institute of Internal Auditors’ (IIA) standards of internal auditing (2008), fraud is a vast concept which encompasses “any illegal acts characterized by deceit, concealment or violation of trust” to obtain any kind of advantage.

Contrarily to the definitions above, the Association of Certified Fraud Examiners (ACFE) considers the occupational part of fraud in the Fraud Tree it designed, neglecting the organizational kind (see definitions in appendix I). Effectively, the tree divides fraud schemes in three different categories/groups: Financial Statement Fraud, Asset Misappropriation, and Corruption (appendix II). Within these categories, more specific fraud schemes are presented.

Particularly, the Corruption category includes fraud schemes such as: Conflicts of interest, Bribery, Illegal Gratuities and Economic Extortion. Regarding Asset Misappropriation, it includes Theft of Cash in hand and receipts, Fraudulent Disbursements and Inventory and other Assets misappropriation. Lastly, respecting Financial Statement Fraud, Asset/Revenues overstatements and understatements constitute the list of the most relevant fraud schemes.

Determinants of Fraud

In general, after defining what fraud represents for the company, an efficient management of fraud risk requires the previous identification of internal weaknesses, proactivity towards the possibility of fraud and detection of the drivers that may lead to fraudulent actions, in order to allow the design of internal prevention response policies accordingly (Smith, 2001). In fact, if not counterproductively created, fraud prevention and control initiatives are the best option to avoid the negative effects of such phenomenon (Wells, 2002).

In the analysis of fraud drivers, the model of Fraud Triangle (appendix III), created by Cressey in 1953, is the basis of numerous fraud detecting methodologies (Lou & Wang, 2009). Cressey identified three necessary conditions for the occurrence of fraud/trust violation: need, opportunity and rationalization/justification (Lero & Geis, 2010).

“Need” regards pressures arising from financial familiar issues, company stakeholders’ expectations, or even political and social pressures that may generate the urge to behave in unethically. Knowing that crimes follow “Opportunity” (Grabosky, Smith & Dempsey, 2001), this vertex poses a major fraud threat for companies, especially when internal controls are not correctly implemented or do not cover all the relevant actions, resulting in ineffective discouragement of unethical behaviors (Murdock, 2008). The last fraud driver is the individual’s capacity to find a “Justification” to the unethical action that fraudsters finds admissible, enabling them not to feel regret (Cullen & Wilcox, 2010). The most common justifications emerge from frustrations in the workplace, such as failed promotions or reduction of benefits, which are normally related to poor human resources management (Murdock, 2008).

According to Boyle, DeZoort and Hermanson (2015), the “fraud model type significantly affects auditors’ fraud risk judgments” (pp. 593) so contextual adaptations are necessary. Thus, despite the Triangle’s high degree of applicability, throughout the years, changes have been proposed to mend its limitations (Kassem & Higson, 2012) and adapt it to today’s context. One of the most important updates of the model was proposed by Wolfe and Hermanson (2004), who considered the need to add an extra element to describe fraud motivations. Their model was known as the Fraud Diamond model, as it added an element to the triangle: the fraudster’s capability. The authors considered that many frauds only occurred because the person committing it had certain skills to identify, understand and exploit internal weaknesses (Boyle, DeZoort & Hermanson, 2015). Furthermore, Murdock (2008) argued that auditors assessing fraud risk should consider people’s character and the

determinants of their attitude. Specifically, he categorized them as honest, situational/potential or dishonest, depending on moral principles, and allocated a certain degree of risk to each category.

Normative References on Risk Management

After getting to the root causes of fraud and framing it as a crucial matter of Corporate Governance, it becomes clear that the implementation of a program that manages risk is crucial to thrive nowadays. The most usually applied measures in today's businesses, such as anonymous reporting channels and codes of conduct, fall short when reducing losses is concerned (Lister, 2007), implying that new measures must be enforced.

In 2009, the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) conceived a risk management framework (appendix IV) which, despite not being specifically designed for fraud risk, can be used to study this phenomenon. The framework's approach involves a process of risk management composed by five main steps: the context of the analysis, the risk assessment (which is the main purpose of the WP and includes the identification, analysis and evaluation of risk), the risk treatment and the constant communication and monitoring of risk throughout the process. Even though there are international standards, fraud risk management practices might vary amongst firms on timings, whether the fraud assessment is integrated with other risk assessment practices and the methods to evaluate risk (Shelton, Whittington & Landsittel, 2001). Studies suggest, that, even with similar mechanisms to prevent and detect fraud, outcomes would be different, due to the specific characteristics of organizations, demonstrating risk management instruments shall be tailored to it (Davis, Jon S. & Pesch, Heather L., 2013).

Risk Context and Assessment Preparation

The context of an analysis is always important, as it concerns the preparation and study of the organization involved. The outcome of this step is a risk management strategy, incorporating the decision of scope, sources of risk, resources needed, assumptions and constraints, the methodology (NIST SP800-30, 2012) and the risk tolerance to fraud schemes (PwC, 2008).

Risk Assessment

With a defined strategy, the second step of the risk management process is the effective assessment of risk. By this step, the auditor is expected to identify risks, analyze and evaluate them (NIST SP800-30, 2012).

Firstly, the identification of a risk comprehends defining the fraud schemes to consider in the assessment (depending on the type of organization, activity sector, among other factors) (ACFE, 2008), how they affect the organization, as well as when and where they may occur (ISO 31000:2009).

Secondly, the risk analysis is constituted by the listing of controls for each sub process and an estimation of the likelihood and impact of fraud schemes, while aware of the uncertainty this sort of analysis encompasses. The estimate is achieved through suitable risk assessment techniques, selected considering the organization, the available resources, the complexity of business, the degree of uncertainty and the business life cycle phase when the assessment is made (ISO/IEC 31010:2009). Combining likelihood and impact, an estimate of risk level will be obtained.

Lastly, an evaluation of the risk levels must be obtained from auditors, who are expected to explain values and compare them to tolerance thresholds previously established.

Risk Treatment

Considering the conclusions of the assessment step, it is fundamental that risk treatment measures are implemented where results require action, with the goal of reducing both likelihood and consequences of risk both in the short and long-term (ISO 31000:2009).

Communication and Consultation

Throughout the whole process, information and communication flows are necessary to ensure the involvement of those being assessed and to guarantee the assessment is still in line with the context of the organization (ISO 31010, 2009). Notice that, contrarily to other messages, communicating risks implies a higher degree of care since a misunderstanding of the message conveyed can undermine the evaluation and the trust between coworkers (Rowan, 1994).

Monitoring and Review

To maintain the information valid and valuable, organizations must review fraud risk estimates as frequently as possible.

III. METHODOLOGY FOLLOWED IN THIS WP

This WP consisted of a directed research internship for the IA department of Sonae, where the research matter was about the assessment of fraud in the company's process of "*Seleção, Contratação e Manutenção de Fornecedores*". The project's method was designed as a case study research with the goal of exploring "what is happening; to seek new insights; to ask questions and to assess phenomena in a new light" (Robson, 2002, p. 59).

Following a building-theory procedure, the research's population was previously defined by the IA department, specifically due to internal motives related to the department's degree of coverage. Thus, the commercial department of "*Casa e Têxtil*" and "*Bazar*" was the object chosen to perform a fraud evaluation.

To achieve the intended goal, the project comprehended using multiple data collection tools, contributing for a stronger basis of the project and taking advantage of existing synergies between them (Eisenhardt, 1989). The study of internal documentation and meetings with experienced internal auditors provided, in the beginning, an understanding of the process's operations. Hereafter, the analysis of theme-related literature allowed the decision of the method used to gather data, compile it and provide insights about fraud exposure of the company. Taking into

consideration the complexity of the phenomenon being studied, the organization's resources and the kind of information needed, the most suitable primary source of quantitative and qualitative information was a questionnaire, carried out through in-person interviews and e-mail (appendix V). Additionally, a semi-structured in-person interview (appendix VI) was designed and conducted with the internal auditor that performed the last process audit in the chosen departments, in order to list the process's internal controls and the related findings (non-conformities).

After obtaining the needed raw information, its treatment was conceived in an excel model containing quantitative and qualitative factors considered relevant to characterize each fraud scheme. This model is a matrix (FA Matrix) adapted from a matrix developed by the ACFE, the IIA and the American Institute of Certified Public Accountants (AICPA) (2008), containing additional features seen as relevant to evaluate the company's degree of vulnerability to fraud.

Fraud Scheme	Sub Process	Fraud Scheme Functioning	Department	Likelihood of Occurrence (L)	Impact (I)	Level of Fraud Risk (L x I)	Controls				Residual Risk Level	Continuous Audit Monitorization	Real level of Fraud Risk
							Last Audit Date	% efficiency perceived (by collaborators)	% effective efficiency (according to findings)	% Controls effectiveness (to mitigate fraud)			

Figure 1- Factors considered in the Fraud Assessment Matrix

Source: Author

The following step was analyzing the matrix's results and shaping hypotheses that may explain them, while confronting it with literature, in order to complement the understanding of facts and reach final conclusions to guide future work.

To summarize, the methodology followed in the WP to assess the fraud risk of “*Seleccção, Contratação e Manutenção de Fornecedores*” is structured as follows:

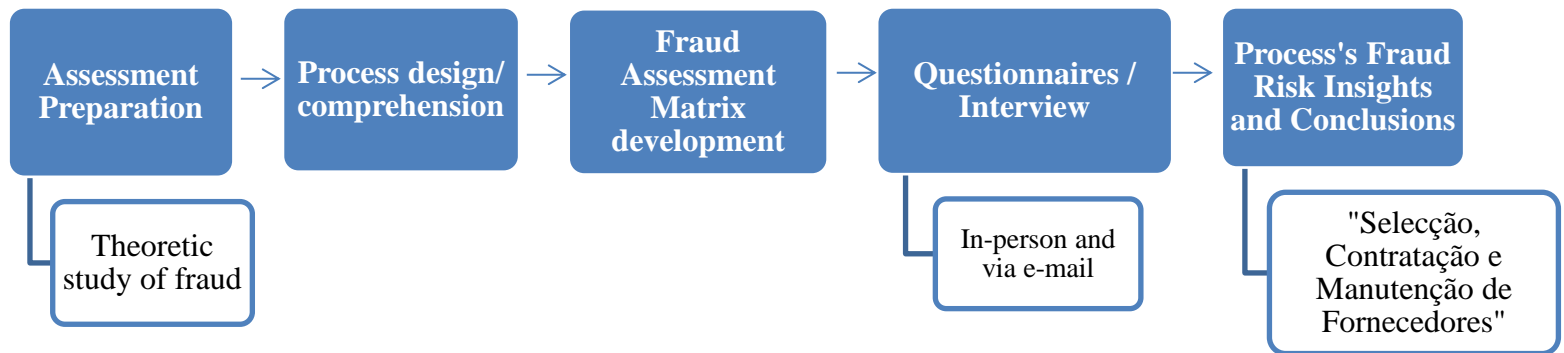


Figure 2 - Methodology followed to assess Fraud Risk at Sonae

Source: Author

“Seleccção, Contratação e Manutenção de Fornecedores” process at Sonae

Generally speaking, Sonae’s operations are organized in groups of processes, which are constituted by processes that are composed by a set of sub processes, covering all the possible activities carried out by Sonae. These processes are performed by many departments/divisions, for all the brands of Sonae’s divisions (Sonae MC and Sonae SR).

In this WP, the focus will be on the abovementioned process, from the perspective of the departments “*Direcção Comercial de Casa e Têxtil (DCCT)*” and “*Direcção Comercial de Bazar (DCB)*”. As presented in Figure 3, the process is composed by five activities, involving all the tasks performed in the relationship with suppliers. Firstly, a procurement of possible suppliers for the needed goods is done. Secondly, after having a proposal from the suppliers, they are compared, based on defined criterion. Once a proposal is understood as the best, Sonae’s commercial department negotiates and signs a general supplying contract, taking responsibility for the relationship management as well as the examination of supplier’s performance and possible

renewal. During this process, not only do commercial directors have an important role, but also area leaders, commercial managers and commercial assistants.

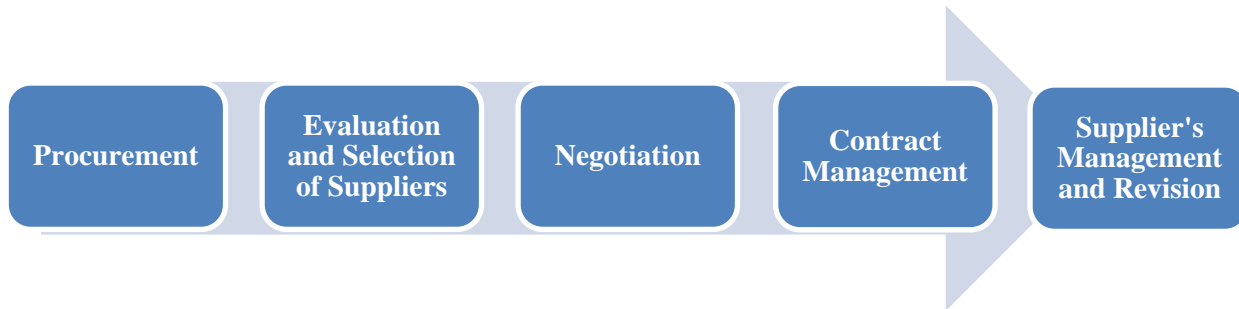


Figure 3 - Subprocesses of the process "Seleção, Contratação e Manutenção de Fornecedores"

Source: Author

THE WP TOOLS

To carry out the WP, a matrix (used to compile quantitative inputs) and the information-gathering tools (questionnaire and interview) were developed to be automatic and include proposals from guides, international standards and organization-specific requirements.

The developed FA Matrix

This tool contains thirteen qualitative and quantitative nonfinancial factors (revisit Figure 1) in its columns, used to describe fraud schemes. These factors' choice was a critical matter since the nonfinancial measures are expected to complement the loopholes of an external/financial audit (Brazel, Jones & Zimbelman, 2009).

The first three factors are the identification of the fraud scheme, which sub process is being analyzed and a description of the scheme's functioning on it (NIST SP800-30, 2012; ACFE, IIA and AICPA, 2008). Then, an identification of the department being assessed is provided. The following three factors are quantitative: average likelihood of fraud scheme's occurrence and average impact of fraud schemes (each one varying from one to five), which multiplied will provide

a level of fraud risk (that ranges from one to twenty-five) (NIST SP800-30, 2012; ISO/IEC 31010, 2009; ACFE, IIA and AICPA, 2008; IA department's discussion).

(1) (*Level of Fraud Risk = Likelihood of occurrence * Impact*)

Furthermore, four other quantitative and qualitative factors associated to controls are presented: firstly, the date of the last process audit; secondly, the average percentage efficiency of internal controls in the fight of a fraud scheme perceived by collaborators¹ (i.e. % efficiency perceived); thirdly, a similar factor, yet the percentage of efficiency of the control is defined according to the number of non-conformities found in the last process audit (i.e. % effective efficiency) – it is calculated through the application of a formula that assigns points to each control, depending on the number of findings and their criticality (see criteria in appendix VII); lastly, the percentage of controls' effectiveness in the mitigation of fraud events, which derives from the average of the efficiency perceived by the effective efficiency (NIST SP800-30, 2012; ACFE, IIA and AICPA, 2008).

(2) (*% Controls' effectiveness = (% efficiency perceived + % effective efficiency)/2*)

After the Controls' evaluation, the matrix features a factor that weighs the existence of continuous auditing of an item in the process, which shall reduce the risk of fraud if it is monitored, as these items are constantly evaluated and compared to thresholds defined. This factor was considered relevant to take into consideration since the IA department contains an IT tool that is specifically designed to perform this kind of analysis and detect outlying values (the red flags for fraudulent actions).

Finally, the last factor is the expression of the real risk of fraud schemes, which consists of a one-to-twenty-five factor. It considers the level of fraud risk balanced by the % controls' effectiveness and

¹ Controls were not designed specifically for fraud schemes but were associated to them for this assessment

the existence of continuous monitoring in the process, defining the colors according to the value obtained (criteria in appendix VIII) (ISO/IEC 31010, 2009; IA department's discussion):

$$\begin{aligned}
 (3) \text{ Real Level of Fraud Risk} &= \\
 &= (\text{Risk level} - (\text{Risk level} * \% \text{ Controls' effectiveness})) \\
 &\quad * \text{Continuous audit ponderation}^2)
 \end{aligned}$$

The lines of the FA Matrix will feature a Sonae-tailored version of ACFE's fraud schemes (cf. Figure 4), focusing on the occupational and organizational schemes that can be initiated in Sonae's business sector.

Conflicts of Interest	Bribery	Illegal gratuities	Economic Extortion	Theft	Fraudulent disbursements	Evasion (of information and/or goods)	Misuse of company Assets	Overstatement of Assets/Revenues/Liabilities/Expenses	Understatement of Assets/Revenues/Liabilities/Expenses	Timing differences	False Documents/Transactions	Liabilities' increase (price collusion w/ suppliers)	Equity value damage (Image)
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Figure 4 - Fraud schemes analyzed in the assessment

Source: Adapted from ACFE (2007) – accessed in 21/12/2015.

Data Collection Tools

As referred previously, two different questionnaires were the selected techniques to obtain data: one for the commercial department's collaborators involved in the process; another for the last process auditor.

The Commercial Departments' Questionnaire

Effectively, the template of the questionnaire, used for in-person interviews and e-mail questionnaires with the commercial department's collaborators, consisted of a four-part document, in this order: "Possible Fraud Schemes"; "Likelihood of occurrence and Impact"; "Procedures and

² The value of this ponderation was defined internally

Internal Controls”; and general questions. This questionnaire was developed and tested within the IA department, in the first place, and upon approval it was put to practice.

The first part consisted of a yes-or-no question, to define which of the fourteen fraud schemes were actually relevant for the fraud risk analysis of the “*Seleção, Contratação e Manutenção de Fornecedores*” process at Sonae. The second part contained a set of three questions, in which the first questions regarded the existence of previous fraud assessments and the remaining part required the classification (from one to five) of the likelihood of occurrence and impact of fraud schemes identified as possible in the previous question, for each of the sub processes. Thirdly, questions about awareness and application of procedures, as well as internal controls’ fraud mitigation effectiveness were asked. Lastly, collaborators were consulted about specific fraud-training, the existing reporting channel and suggestions to fight fraud.

The scope of respondents to this questionnaire consisted of first-line employees (Commercial Directors (DC), Area Leaders (DUN) and Commercial Managers (GC), according to appendix IX) connected to the process in the chosen departments, as defined in a meeting with the IA department’s senior staff. Consequently, while DCs and DUNs were personally interviewed, due to the expectation of a higher level of technical know-how, deriving from higher experience and a broader perspective of the process, the departments’ GCs were asked to fill the same questionnaire via e-mail. The chosen width is justified by the fact that fraud assessments must take into account a wider range of information than, for instance, financial audits, where only a sample of the scope is checked (Albrecht & Hoopes, 2014).

The Internal Auditors’ Questionnaire

Parallel to this questionnaire, a semi-structured short questionnaire (see appendix VI) was developed to collect data about the last “*Seleção, Contratação e Manutenção de Fornecedores*” audit. In general, this interview aimed at discovering: specificities of the departments being assessed; which internal controls were identified in the process; how many findings were reported

in the audit; a linkage between the existing internal controls and the fraud schemes; and a formula to calculate the percentage effectiveness of controls in discouraging fraud. The results of the interview were translated in an excel worksheet containing the criteria to determine controls' effectiveness, which is directly linked to the excel model of the FA Matrix (see appendix VII).

IV. FRAUD ASSESSMENT FINDINGS

In this chapter, the information gathered through the 24 valid answers (out of 31 defined DCs, DUNs and GCs) will be compiled and analyzed. Effectively, the average and coefficient of variation were used as measures of central tendency and dispersion, and they were calculated for each numerical question. Having these values, the FA Matrix was filled and, consequently, retrieved the fraud risk along the process being studied. The output produced in this WP is compiled in the FA Matrix (appendix X).

In terms of coefficient of variation, for values below 15% (0,15), dispersion was considered low; for values between 15% (0,15) and 30% (0,30), dispersion was considered medium; above 30% (0,30), dispersion was seen as high (Pestana and Gageiro, 2008).

Likelihood and Impact of possible Fraud schemes

In the questionnaire used to inquire the DCB and DCC&T, the first question intended to discover which of the initially identified fraud schemes were actually considered relevant for the analysis, according to the opinion of those involved in the process³.

³ if the number of respondents answering "Sim" was higher or equal to 25%, the IA Department of Sonae defined the fraud scheme should be included in the analysis.

Table 1- Possible Fraud Schemes

Conflicts of Interest	Bribery	Illegal gratuities	Economic Extortion	Theft	Fraudulent disbursements	Evasion (of information and/or goods)	Misuse of company Assets	Overstatement of Assets/Revenues/Liabilities/Expenses	Understatement of Assets/Revenues/Liabilities/Expenses	Timing differences	False Documents/Transactions	Liabilities' increase (price collusion w/ suppliers)	Equity value damage (Image)
86,36%	90,91%	81,82%	40,91%	27,27%	40,91%	40,91%	18,18%	40,91%	22,73%	22,73%	36,36%	50,00%	36,36%

Source: Question 1, from the questionnaire in Appendix V

In Table 1, one can identify which fraud schemes were deemed as possible to occur in the process of “*Seleção, Contratação e Manutenção de Fornecedores*”, according to respondents’ experience. Specifically, “Conflicts of Interest”, “Bribery” and “Illegal Gratuities” were the most consensual answers, while “Misuse of Assets”, “Timing Differences” and “Understatement of Assets/Revenues /Liabilities/Expenses” were only considered possible by around 20% of collaborators, determining their exclusion of the subsequent analysis.

After defining the fraud schemes to be analyzed in this assessment, the questionnaire asked for the perceived of the Likelihood of occurrence and the Impact if successfully carried out in each of the five sub processes of “*Seleção, Contratação e Manutenção de Fornecedores*”. For informative reasons, values above 3 were highlighted as they represent more relevant cases.

Table 2 - Average Likelihood of Occurrence of Fraud Schemes, in different Sub processes

	Conflicts of Interest	Bribery	Illegal gratuities	Economic Extortion	Theft	Fraudulent disbursements	Evasion (of information and/or goods)	Overstatement of Assets/Revenue s/Liabilities/Expenses	False Documents/ Transactions	Liabilities' increase (collusion)	Equity value damage (Image)	Avg. Fraud Risk (per Sub process)
	L	L	L	L	L	L	L	L	L	L	L	
Procurement	2,39 0,36	3,21 0,37	3,71 0,16	1,11 0,59	2,00 0,39	2,00 0,31	2,38 0,14	2,75 0,34	2,00 0,87	3,30 0,54	1,83 0,63	2,43
Evaluation and Selection of Suppliers	2,89 0,28	3,40 0,32	3,83 0,13	1,33 0,52	2,17 0,29	2,00 0,30	2,22 0,32	3,00 0,36	2,00 0,80	3,18 0,51	1,88 0,62	2,54
Negotiation	2,68 0,28	3,40 0,32	3,78 0,13	1,33 0,52	2,17 0,29	2,00 0,29	2,22 0,32	3,00 0,36	2,00 0,80	3,18 0,51	1,88 0,62	2,51
Contract's Management	2,56 0,31	3,07 0,37	3,59 0,13	1,38 0,48	2,17 0,44	2,00 0,37	2,22 0,23	2,63 0,32	2,00 0,80	3,18 0,51	1,88 0,53	2,42
Supplier's Management and Revision	2,61 0,30	3,14 0,36	3,76 0,20	1,50 0,64	2,17 0,36	2,00 0,31	2,22 0,34	2,89 0,39	2,00 0,80	3,18 0,51	1,88 0,53	2,49
Fraud Scheme Average	2,63	3,25	3,73	1,33	2,13	2,00	2,25	2,85	2,00	3,21	1,87	

Source: Question 2.2, from the questionnaire in Appendix V

Legend: Average | Coefficient of variation

Starting with the Likelihood of Occurrence (Table 2), it is noticeable that, in general, the considered schemes were actually seen as possible to occur throughout all the sub processes and their average values of likelihood, between different sub processes, is very similar.

In terms of fraud schemes, the one that presents the highest probability of occurring is “Illegal Gratuities”, with values ranging between 3,59 and 3,83, followed by “Bribery”. On the opposite situation, “Economic Extortion” and “Equity Value Damage” are the schemes presenting the lowest likeliness of happening within the analyzed process, with average values below 2.

Concerning sub processes, the highest average fraud risk is obtained in the “Evaluation and Selection of Suppliers” and “Negotiation” phase, with an average of 2,54 and 2,51, respectively.

Table 3 - Average Impact of Fraud Schemes, in different Sub processes

	Conflicts of Interest	Bribery	Illegal gratuities	Economic Extortion	Theft	Fraudulent disbursements	Evasion (of information and/or goods)	Overstatement of Assets/Revenue s/Liabilities/Expenses	False Documents/ Transactions	Liabilities' increase (collusion)	Equity value damage (Image)	Avg. Fraud Risk (per Sub process)
	I	I	I	I	I	I	I	I	I	I	I	
Procurement	2,72 0,31	3,64 0,32	3,65 0,16	1,89 0,34	1,80 0,43	1,00 0,61	1,75 0,19	2,88 0,32	4,13 0,42	3,50 0,51	2,67 0,43	2,69
Evaluation and Selection of Suppliers	2,95 0,27	3,80 0,28	3,67 0,14	2,22 0,31	1,67 0,38	1,00 0,61	1,89 0,37	3,22 0,34	4,13 0,39	3,55 0,46	3,13 0,37	2,84
Negotiation	2,95 0,25	3,80 0,28	3,72 0,14	2,22 0,31	1,67 0,38	1,00 0,59	1,89 0,37	3,22 0,34	4,13 0,39	3,55 0,46	3,13 0,37	2,84
Contract's Management	2,67 0,29	3,57 0,32	3,53 0,13	1,88 0,35	1,67 0,57	1,40 0,52	1,89 0,27	2,38 0,35	4,13 0,39	3,55 0,46	3,13 0,32	2,71
Supplier's Management and Revision	2,67 0,29	3,50 0,33	3,65 0,21	2,13 0,46	1,67 0,46	1,40 0,44	1,89 0,40	3,00 0,38	4,13 0,39	3,55 0,46	3,13 0,32	2,79
Fraud Scheme Average	2,79	3,66	3,64	2,07	1,69	1,16	1,86	2,94	4,13	3,54	3,03	

Legend: Average | Coefficient of variation (below)

Source: Question 2.2, from the questionnaire in Appendix V

The analysis of Impact (Table 3), as perceived by those involved in “*Seleção, Contratação e Manutenção de Fornecedores*”, demonstrates that the highest effect in the results of Sonae would occur in case the “False Documents/Transactions” scheme was successfully deployed, with an average expected impact of 4,13 along the whole process. Moreover, the occurrence of deliberate “Liabilities’ Increase (through price collusion with suppliers)”, “Illegal Gratuities”, “Bribery” or the Damage of the company’s Equity (namely, Brand Image) are understood to be serious.

Considering the Impact of schemes per sub process, a fraudulent event during the “Negotiation” and “Evaluation and Selection of Suppliers” phases are expected to have residually higher repercussions in the company’s objectives, followed by the “Supplier’s Management and Revision”.

In both factors (Likelihood of occurrence and Impact), the level of dispersion revealed by the coefficient of variation (a division of the standard deviation by the average) is considered high, which means the responses obtained were not very homogeneous and dependent on the sensitivity/perception and experience of the collaborators’.

As explained in section 4, the factor “Level of Fraud Risk” is composed by the multiplication of the abovementioned factors: Likelihood of Occurrence and Impact.

Table 4 - Level of Fraud Risk perceived by collaborators

	Conflicts of Interest	Bribery	Illegal gratuities	Economic Extortion	Theft	Fraudulent disbursements	Evasion (of information and/or goods)	Overstatement of Assets/Revenues /Liabilities/Expenses	False Documents/Transactions	Liabilities' increase (collusion)	Equity value damage (Image)	Avg. Fraud Risk (per sub process)
Procurement	6,50	11,71	13,52	2,10	3,60	2,00	4,16	7,91	8,25	11,55	4,89	6,93
Evaluation and Selection of	8,53	12,92	14,06	2,96	3,61	2,00	4,20	9,67	8,25	11,28	5,86	7,58
Negotiation	7,91	12,92	14,06	2,96	3,61	2,00	4,20	9,67	8,25	11,28	5,86	7,52
Contract's Management	6,81	10,97	12,66	2,58	3,61	2,80	4,20	6,23	8,25	11,28	5,86	6,84
Supplier's Management and	6,96	11,00	13,73	3,19	3,61	2,80	4,20	8,67	8,25	11,28	5,86	7,23
Fraud Scheme average	7,34	11,90	13,61	2,76	3,61	2,32	4,19	8,43	8,25	11,33	5,67	

Legend: **Green:** 1-6,25; **Yellow:** 6,25-12,5; **Orange:** 12,5-18,75; **Red:** 18,75-25

Source: Author

Table 4 shows exactly which fraud schemes express a higher level of fraud risk. It is easily understandable that “Illegal Gratuities” present the highest level fraud risk among the analyzed schemes, varying between 12,66 in the “Contract’s Management” and 14,06 in the “Negotiation” and “Evaluation and Selection of Suppliers” sub processes. Nevertheless, it is noteworthy that none of the fraud schemes reaches the most severe level of risk. “Theft”, “Economic Extortion”, “Fraudulent Disbursements” and “Evasion” reveal a low fraud risk level.

Analyzing sub processes’, “Evaluation and Selection of Suppliers” and “Negotiation”, respectively, appear as the most prone to fraudulent events, specially to “Bribery” and “Illegal “Gratuities”.

When asked about the awareness and application of the existing procedures for “*Seleção, Contratação e Manutenção de Fornecedores*”, respondents expressed a positive image: 68,1% believes procedures are known by employees and 85% says they are applied correctly during the process by those who are aware of them. Nevertheless, one third of interviewees suggested the

implementation of additional procedures and the need for a delineated training program to disclose the already existing procedures.

Table 5 - Controls' Assessment

Fraud Schemes	% Controls' effectiveness (per fraud scheme)
Conflicts of Interest	43,96%
Bribery	74,88%
Illegal gratuities	75,85%
Economic Extortion	0% ³
Theft	79,80%
Fraudulent disbursements	79,80%
Evasion (of information and/or goods)	79,80%
Overstatement of Assets/Revenues/Liabilities/Expenses	19,33%
False Documents/Transactions	19,33%
Liabilities' increase (collusion)	45,28%
Equity value damage (Image)	45,28%

Source: Author

The perceived controls' effectiveness was evaluated, once again, through the average opinion of the questionnaire's participants but, this time, a more objective factor was included to weigh their answers: the effective controls' effectiveness according to findings/non-conformities found in controls during the last process audit (which were previously linked to each fraud scheme). As a result of these two factors' average, internal controls unveiled different levels of effectiveness to specifically fight fraud schemes in the process (cf. Table5). The effectiveness ranged from 0%, in "Economic Extortion"⁴, to 79,80%, in "Theft", "Evasion" and "Fraudulent Disbursement" schemes. Moreover, it is important to point the low effectiveness of controls linked to "False Documents/Transactions" and "Overstatement of Accounting Items", which obtained only 19,33%.

⁴ None of the existing internal controls were understood as able to mitigate "Economic Extortion" fraud schemes

Along with controls' classification in terms of ability to fight fraud, a question regarding the sufficiency of current internal controls was raised and 66,7% answered "Yes".

The last factor taken into account was the existence continuous monitoring of certain items in the process, which in the case of "*Seleção, Contratação e Manutenção de Fornecedores*" is not applicable. Consequently, no alterations of the fraud risk level were made due to it (as the ponderation value was equal to one).

The result of aggregating all the data compiled for each factor and using the formula (3) in section V determined a real risk level of fraud schemes that is summarized in Table 6.

Table 6 - Real Level of Fraud Risk (per Fraud Scheme)

Conflicts of Interest	Bribery	Illegal gratuities	Economic Extorsion	Theft	Fraudulent disbursements	Evasion (of information and/or goods)
4,13	2,99	3,29	2,76	0,73	0,47	0,85

Misuse of company Assets	Overstatement of Assets/Revenues/Liabilities/Expenses	Understatement of Assets/Revenues/Liabilities/Expenses	Timing difference	False Document/Transaction	Liabilities' increase (collusion)	Equity value damage (Image)
NA	6,69	NA	NA	6,66	6,19	4,55

Source: Author

The values obtained vary between 0,47 ("Fraudulent Disbursements") and 6,69 ("Overstatement of Financial items") and indicate that, although certain fraud schemes presented considerable levels of fraud risk, after considering internal controls' mitigation effect, the risk level is significantly reduced. This effect is evident in "Bribery", "Illegal Gratuities" and "Conflicts of Interest", for example, which were substituted by "False Documents/Transactions", "Liabilities' Increase (through price-collusion with suppliers)" as the most risky fraud schemes. A possible explanation for this situation is: since fraud schemes of the "Corruption" group are already well-known and catch the attention of top-managers, the designed procedures and internal controls tend to mitigate

these schemes more than the remaining ones. Additionally, it is noticeable that the real level of fraud risk is generally low, which may express results biased, to a certain extent, specially if any potential fraudsters were approached in the questionnaires.

Table 7 – Real Level of Fraud Risk (per Sub process)

Sub process	Real Level of Fraud Risk per sub process
Procurement	3,83
Evaluation and Selection of Suppliers	4,61
Negotiation	4,22
Contracts' Management	4,76
Suppliers' Management and Revision	4,24

Source: Author

When evaluating the average fraud exposure (which includes all possible fraud schemes) per sub processes (Table 7), it reflects higher levels in “Contracts’ Management” and “Evaluation and Selection of Suppliers”. Generally, respondents referred that, even though there were principles, procedures and controls that established certain steps and the obligation to set criteria to choose suppliers and evaluate proposals, there was always an *ad-hoc* component throughout the process and in evaluations. Also, the characteristics of retail sector, which entails the research for a great number of suppliers for many products, complicated the proposals’ completely objective evaluation and the management of relationships with suppliers. Every time the process’s mechanisms are activated, a certain degree of customization to the kind of good being sourced or the suppliers’ characteristics is needed.

General Questions and Notes

As mentioned before, the final group of questions was focused on the company’s reporting channel and specific fraud-training received (besides the mandatory training about the company’s Code of Conduct). When asked if the respondents had ever experienced fraud-training while at Sonae, not only 9,1% answered “Yes”, but also most of the negative responses were followed by the

identification of the need to raise awareness and specific training about this fracturing theme. With respect to the fraud-reporting channel, opinions were less homogeneous: 38,1% confirmed a preference for the current system (that requires the identification of the whistleblower), relative to the 61,9% respondents selecting the anonymous reporting channel as the most fruitful one, despite the possibility of creating an atmosphere of distrust.

Throughout interviews and e-mail questionnaires, collaborators used the opportunity to express their concerns and suggestions to improve the process flow. Some of the most remarkable commentaries emphasized the need to increase the training provided to new hires and current employees, the importance of a fraud assessment as a deterrence mechanism and the relevance of paying attention to transactions involving the responsibility of lower hierarchical employees.

V. MAIN CONTRIBUTIONS, LIMITATIONS AND RECOMMENDATIONS

The goal of this WP was the development and implementation of a methodology, which would allow the IA department of Sonae to assess fraud risk in the process of “*Seleção, Contratação e Manutenção de Fornecedores*”. This assessment revealed that “Corruption” group of fraud schemes, namely “Illegal Gratuities” and “Bribery”, is perceived as the one with the highest Likelihood of Occurrence and Impact. However, after considering the effectiveness of controls in the mitigation of fraud, the pattern changed: “False Documents/Transactions”, “Overstatement of Accounting Items” and “Liabilities’ Increase” present the highest levels of fraud risk. Concerning sub processes, “Evaluation and Selection of Suppliers” and “Contracts’ Management” are seen as the most prone to fraud events.

In general, the discovered values of fraud risk do not express any critical or high level of such risk. This situation may derive from a limitation of the methodology: the real fraud risk estimation relies greatly on the sensitivity of collaborators, which may reveal a tendency to underestimate fraud risk, either to protect their own department, or due to lack of understanding of the phenomenon’s relevance. Nonetheless, a relative analysis of which fraud schemes and sub processes are more

problematic can still be performed and, once the method is applied to all the other processes of Sonae, this relative analysis will also permit their ranking, according to fraud risk levels obtained. Thus, the information gathered is still of great relevance and will certainly help top-managers draw conclusions about possible internal vulnerabilities, prior to the occurrence of problems.

Still, this limitation reinforces the need to introduce specific fraud-training in the company's training programs to guarantee awareness about the theme and the existing procedures. Additionally, the enforcement of the procedure that instructs collaborators to register all the information about possible suppliers prior to the contract signing, allied to an homogenization of evaluation reports among departments/divisions of the company and the improvement of internal document-sharing and communication channels, would certainly permit a reduction of the company's exposure to fraud and facilitate the initiation of regular fraud assessments. Lastly, it is crucial to ensure the involvement of senior managers during the assessment and treatment of fraud risk, inasmuch as their attention to warning signs and direct contribution in the assessment are fundamental to effectively manage fraud risk. Their participation in the process will establish a strong tone at the top, which is known to have a significant effect in the deterrence of fraud (Hermanson, Smith & Stephens, 2012).

Future work should be even more focused on preventing, rather than detecting, fraudulent activity. For that matter, applying this methodology to all the processes of Sonae, the future, is crucial and will provide a good perspective of the phenomenon's relevance in the company. Moreover, fraud-specific audit tests to assess controls' effectiveness are being developed, to complement the opinion of and reduce the exposure to employees' subjectivity in such analysis. Also, to reduce the possibility of obtaining biased results, opinions of external experts should be included in the estimation of likelihood and impact. To complement this research, a formal fraud response plan, with a clearly defined response strategy (that can instill the company's care about the topic on employees' minds) will be created for the company.

VI. REFERENCE LIST

- ACFE.** 2014. *Report to the Nations on Occupational Fraud and Abuse*. Austin: ACFE
- ACFE.** 2015. "VII. Fraudulent Financial Transactions: Fraud Schemes." *ACFE: Together, Reducing Fraud Worldwide*. Accessed in November 3, 2015. http://www.acfe.com/uploadedFiles/Shared_Content/Products/Self-Study_CPE/Intro%20to%20Fraud-Chapter%20Excerpt.pdf
- ACFE.** 2015. "What is Fraud?". *ACFE: Together, Reducing Fraud Worldwide*. Accessed in October 14, 2015 <http://www.acfe.com/fraud-101.aspx>
- ACFE; IIA & AICPA.** 2008. *Managing the Business Risk of Fraud: A Practical Guide*. Austin: ACFE; IIA & AICPA
- Albrecht, W. Steve & Hoopes, Jeffrey L.** 2014. "Why Audits Cannot Detect All Fraud." *CPA Journal*. Vol. 84 (No. 10): 12
- Boyle, Douglas M.; DeZoort, Todd & Hermanson, Dana R.** 2015. "The effect of alternative fraud model use on auditors' fraud risk judgments." *Journal of Accounting and Public Policy*. Vol. 34 (No. 6): 578-596
- Brazel, Joseph F.; Jones, Keith L. & Zimbelman, Mark F.** 2009. "Using Nonfinancial Measures to Assess Fraud Risk." *Journal of Accounting Research*. Vol. 47 (No. 5): 1135-1166
- Chapman, Aub and Smith, Russel G.** 2001. "Controlling Financial Services Fraud.", *Trends and Issues in Crime and Criminal Justice*, Vol. 189.
- Cullen, Francis T. and Wilcox, Pamela K.** 2010. *Encyclopedia of Criminological Theory*. Thousand Oaks: Sage Publications
- Davis, Jon S. & Pesch, Heather L.** 2013. "Fraud dynamics and controls in organizations" *Accounting, Organizations and Society*. Vol. 38 (No 6-7): 469-483
- Ernst & Young Fraud Investigation & Dispute Services.** 2015. *Fraud and corruption – the easy option for growth? Europe, Middle East, India and Africa Fraud Survey*. United Kingdom: Ernst & Young.
- Eisenhardt, Kathleen M.** 1989. "Building Theories from Case Study Research" *Academy of Management. The Academy of Management Review*. Vol 14 (No. 4): 532-550
- Farrel, Barrister R. and Healy, P.** 2000. "White Collar Crime: A Profile of the Perpetrator and an Evaluation of the Responsibilities for it Prevention and Detection" *Journal of Forensic Accounting*, Vol. I: 17-34.

- Ferreira, Abílio.** 2015. “Furtos e perdas no retalho valem €300 milhões por ano em Portugal”. *Expresso*, November, 5. In <http://expresso.sapo.pt/economia/2015-11-05-Furtos-e-perdas-no-retalho-valem-300-milhoes-por-ano-em-Portugal>
- Grabosky, P.N., Smith, R.G. & Dempsey, G.** 2010. *Electronic Theft: Unlawful Acquisition in Cyberspace*, Cambridge: Cambridge University Press
- Hermanson, Dana R.; Smith, Jason L. & Stephens, Nathaniel M.** 2012. “How Effective are Organizations’ Internal Controls? Insights into Specific Internal Control Elements.” *Current Issues in Auditing*. Vol. 6 (No. 1): A31-A50.
- IIA.** 2008. “International Standards for the Professional Practice of Internal Auditing”. <https://na.theiia.org/standards-guidance/Public%20Documents/IPPF%202013%20English.pdf>
- ISO 31000.** 2009. *Risk Management – Principles and guidelines*. Geneva: ISO
- ISO/IEC 31010.** 2009. *Risk management – Risk assessment techniques*. Geneva: ISO & IEC.
- Iyer, Nigel and Samociuk, Martin.** 1992. “Recognising and Respecting the Risk.” *Fraud and Corruption: Prevention and Detection*, 23-37. Aldershot: Gower.
- Johnson, Cheryl L. & Geis, Gilbert.** 2010. "Cressey, Donald R.: Embezzlement and White-Collar Crime." In *Encyclopedia of Criminological Theory*, ed. Francis T. Cullen & Pamela Wilcox, 224-231. Thousand Oaks: Sage Publications, Inc.
- Kassem, Rasha and Higson, Andrew.** 2012. “The New Fraud Triangle Model.” *Journal of Emerging Trends in Economics and Management Sciences (JETEMS)*, Vol. 3 (No. 3): 191-195
- Kirk, David N. and Woodcock, Anthony J.J.** 1992. *Serious Fraud: Investigation and Trial*. London: Butterworths.
- KPMG Forensic.** 2013. *Fraud Risk Management. Developing a Strategy for Prevention, Detection and Response*. Switzerland: KPMG.
- Kroll.** 2014. 2013/2014 *Global Fraud Report*. New York: Kroll.
- Lister, Linda M.** 2007. “A practical approach to Fraud Risk.” *Internal Auditor*. Vol. 64 (No. 6): 61
- Lou, Yung-I and Wang Ming-Long.** 2009. “Fraud Risk Factor of the Fraud Triangle: Assessing the Likelihood of Fraudulent Financial Reporting.” *Journal of Economic Business Research*, Vol. 7 (No. 2): 61-78.
- Murdoch, Herman.** 2008. “The Three Dimensions of Fraud.” *Internal Auditor*, Vol. 65 (No. 4): 81
- Murphy, Glenn.** 2015. “COSO Principle 8 – Consider Potential for Fraud”. <http://www.bestgrc.com/coso-principles-series/coso-principle-8-consider-potential-fraud/>
- NIST SP800-30.** 2012. *Guide for Conducting Risk Assessments*. Gaithersburg: NIST

- Pestana, Maria H. & Gageiro, João Nunes.** 2008. *Análise de Dados para as Ciências Sociais: A complementaridade do SPSS*, 5th ed. Lisboa: Edições Sílabo.
- Power, Michael.** 2013. "The apparatus of fraud risk." *Accounting, Organizations and Society*. Vol. 38: 525-543.
- PwC.** 2008. *A practical guide to risk assessment: How principles based-risk assessment enables organizations to take the right risks*. United States: PwC
- Rezaee, Zabibollah and Riley, Richard.** 2010. "Financial Statement Fraud Defined." *Financial Statement Fraud: Prevention and Detection*, 3-30. Hoboken: John Wiley & Sons, Inc.
- Robson, Colin.** 2002. "Developing the research questions." In *Real World Research*, 2nd ed, 56-59. Oxford: Blackwell.
- Rossow, Gedeon J.** 2000. "Defining and Understanding Fraud: A South African Case Study." *Business Ethics Quarterly*. Vol. 10 (No. 4): 885-895
- Rowan, Katherine E.** 2006. "Why Rules for Risk Communication Are Not Enough: A Problem-Solving Approach to Risk Communication." *Risk Analysis*. Vol. 14 (No. 3): 365-374
- Santos, Cláudia Maria Cruz.** 2001. *O Crime de Colarinho Branco (Da Origem do Conceito e sua Relevância Criminológica à Questão da Desigualdade na Administração da Justiça Penal)*. Coimbra: Coimbra Editora.
- Shelton, Sandra W.; Whittington, Ray & Landsittel, David.** 2001. "Auditing Firms' Fraud Risk Assessment Practices." *Accounting Horizons*. Vol. 15 (No.1): 19-33
- Smith, Russel G.** 2001. "Defining, Measuring, and Reporting Fraud Risk Within Your Organisation." http://www.aic.gov.au/media_library/conferences/other/smith_russell/2001-07-iir.pdf
- Vaisu, Lucian, Warren, Matthew and Mackay, David.** 2003. "Defining Fraud: Issues for Organizations from an Information Systems Perspective." *PACIS 2003 Proceedings*. Paper 66.
- Wells, Joseph T.** 2002. "Occupational Fraud: The Audit as Deterrent." *Journal of Accountancy*. Vol. 193 (No. 4): 24-28.
- Wells, Joseph T.** 2007. *Corporate Fraud Handbook. Prevention and Detection*. New Jersey: John Wiley & Sons, Inc.
- Wolfe, David T. and Hermanson, Dana R.** 2004. "The Fraud Diamond: Considering the Four Elements of Fraud." *CPA Journal*. Vol.74 (No. 12): 38-42
- Zimbelman, Mark F.** 1997. "The Effects of SAS No, 82 on Auditors' Attention to Fraud Risk Factors and Audit Planning Decisions." *Journal of Accounting Research*. Vol. 35: 75-97